CHAPTER 8
COMBAT SUPPORT

The battalion commander is responsible for effective combat support. Mortars, artillery, air defense artillery, combat engineers, and aviation assets provide CS for the platoon. The battalion commander decides how to employ assets based on his estimate of the situation. He attaches supporting elements to the company, or he places CS elements under operational control, in direct support (DS), or in general support (GS) of the company. The company commander may attach supporting elements to the platoon. The platoon leader must know the employment considerations and abilities of all CS assets.

Section I. FIRE SUPPORT

Fire support is the collective and coordinated use of indirect fire weapons and armed aircraft in support of the battle plan. Fire support assets include mortars, field artillery cannons and rockets, Army aviation, close air support, and naval surface fire support. Support can either be lethal or non-lethal (smoke or illumination). Indirect fire support procedures do not change significantly with the ICV-equipped infantry platoon except that they should be more responsive. Additionally, the mortars organic to the company provide the earliest and most responsive fires to the platoon.

8-1. FIRE PLANNING

Digitization improves company and platoon ability to conduct fire support planning. The platoon leader and FO receive the company indirect fire plan on their CTD or LWS as soon as the company FSO enters it into the database on his hand-held terminal unit (HTU). No longer must the platoon leader or FO wait until the final OPORD is issued to receive the fire support overlay.

a. The platoon leader and or platoon FO call up the operational graphics and the latest enemy situational graphics to aid with their planning, enter the platoon's proposed targets into the HTU, and forward them to the *company* FSO's HTU. The company FSO reviews the proposed targets with the company commander. The company commander accepts, rejects, or adjusts the platoon leader's proposed targets.

(1) If the company commander accepts or adjusts the targets, he incorporates them into the company fire plan. The *company* FSO uses his HTU to forward them to the *battalion* FSO's AFATDS as part of the company fire plan.

(2) It is the FSO's responsibility to clean up the digital fire support graphics. The company FSO ensures only valid targets remain on the digital fire support graphics.

b. Once the battalion and company finalize the targets, the company FSO puts out a net call over his CTD or LWS to inform the platoon leaders and platoon FOs that the fire support graphics are finalized. All leaders must review the digital fire support graphics on their CTD or LWS so they are familiar with any changes and to ensure graphics are updated for subsequent fire missions

c. Fire support planning is conducted concurrently with maneuver planning at all levels. Companies and battalions typically use top-down fire support planning with bottom-up refinement of the plans. The company commander develops guidance for fire support in

terms of task and purpose. In turn, the fire support planner determines the method to be used in accomplishing each task. He also specifies an end state that quantifies task accomplishment.

d. Individual fire support assets incorporate assigned tasks into their fire plans. Units tasked to initiate fires must refine and rehearse their assigned task. This means the platoon leader refines the platoon's assigned portion of the company 's fire support plan to ensure the designated targets will achieve the intended purpose. He also conducts rehearsals to prepare for the mission and, as specified in the plan, directs the platoon to execute its assigned targets.

8-2. LINKING FIRE SUPPORT TASKS AND MANEUVER PURPOSE

A clearly defined maneuver purpose enables the maneuver commander to articulate precisely how he wants indirect fire to affect the enemy during different portions of the battle. This in turn allows fire support planners to develop an effective plan to support the intended purpose. They can determine each required task (in terms of effects on target), the best method for accomplishing each task (in terms of a fire support asset and its fire capabilities), and a means of quantifying accomplishment.

A carefully developed method of fire is equally valuable during execution of the fire support mission; it assists not only the firing elements but also the observers responsible for monitoring the effects of the indirect fires. With a clear understanding of the intended effects, fire support assets and observers can work together effectively, planning and adjusting fires as necessary to achieve the desired effects on the enemy. The following paragraphs describe several types of targeting effects associated with fire support tasks.

a. **Final Protective Fire Planning.** Final protective fires are designed to create a final barrier, or "steel curtain," to prevent a dismounted enemy from moving across defensive lines. They are fires of last resort and take priority over all other fires. The employment of FPFs presents several potential problems. They are linear fires, with coverage dependent on the firing sheaf of the fire support asset(s). In addition, while FPFs may create a barrier against penetration by enemy infantry, armored vehicles may simply button up and move through the fires into the friendly defensive position. FPFs are planned targets with a clearly defined purpose. FPF planning is normally delegated to the company that is allocated the support.

b. **Target Refinement.** The platoon leader is responsible for employing indirect fires in his zone or sector. The most critical aspect of this responsibility is target refinement, in which he makes changes to the fire support plan to ensure targets accomplish the company and or battalion commander's intended battlefield purpose. Rather than merely executing targets without regard to the actual enemy situation, the platoon leader must be ready to support the commander's intent by adjusting existing targets or nominating new targets that will allow engagement of specific enemy forces.

c. **Fire Support Preparation.** As noted, although the company and battalion commanders establish target tasks and purposes and allocate appropriate fire support assets, the platoon leader must ensure execution of assigned targets. Successful execution demands detailed preparation that focuses on areas covered in the following paragraphs.

(1) ***Observation Plan.*** In developing the observation plan, the platoon leader must ensure both a primary observer and an alternate observer for redundancy to cover all targets. The

plan must provide clear, precise guidance for the observers. Positioning is perhaps the most important aspect of the plan.

(a) Observers' positions must allow them to see the trigger for initiating fires as well as the target area and the enemy forces on which the target is oriented. The platoon leader also must consider other aspects of observer capabilities, including available equipment, communication, and security of the teams.

(b) In addition to providing the specific guidance outlined in the observation plan, the platoon leader must ensure each observer understands the target task and the purpose. For example, observers must understand that once the first round impacts, the original target location is of no consequence. They must orient on the targeted enemy force to ensure that fires achieve the intended battlefield purpose.

(2) ***Rehearsals***. The platoon leader is responsible for involving his observers in platoon- and company-level rehearsals. He also should use rehearsals to ensure the platoon's primary and backup communications systems adequately support the plan.

(3) ***Target Adjustment.*** In the defense, the commander should confirm target location by adjusting fires as part of engagement area development.

Section II. INDIRECT FIRE SUPPORT

The main indirect fire support available to the platoon includes mortars and field artillery (Table 8-1, page 8-4). This section discusses the responsibilities, considerations, and procedures for employing all the indirect-fire assets supporting the platoon. (FM 6-30 discusses in detail how to call for and adjust indirect fires.)

CALIBER:	60-mm	81-mm	81-mm (improved)	120-mm	105-mm	155-mm	155-mm
MODEL:	M224	M29A1	M252	M285	M119	M198	M109A6
MAX RANGE (HE)(m):	3,490	4,595	5,608	7,200	14,000	18,100	18,100
PLANNING RANGE (m):					11,500	14,600	14,600
PROJECTILE:	HE, WP, ILLUM,	HE, WP, ILLUM,	HE, WP, ILLUM, RP	HE, SMK, ILLUM,	HE M760 ILLUM, HEP-T, APICM, CHEM, RAP	HE, WP, ILLUM, SMK, CHEM, NUC, RAP, FASCAM, CPHD, AP/ DPICM	HE, WP, ILLUM, SMK, CHEM, NUC, RAP, FASCAM, CPHD, AP/ DPICM
MAX RATE OF FIRE:	30 RPM FOR 1 MIN	30 RPM FOR 1 MIN	30 RPM FOR 2 MIN	15 RPM FOR 3 MIN	6 RPM FOR 1 MIN	4 RPM FOR 1 MIN	4 RPM FOR 1 MIN
SUSTAINED RATE OF FIRE (rd/min):	20	8	15	5	3	2	2
MINIMUM RANGE (m):	70	70	83	180	DIRECT FIRE	DIRECT FIRE	DIRECT FIRE
FUZES:	MO	PD, VT, TIME, DLY	PD, VT, TIME, DLY	MO	PD, VT, MTSQ, CP, MT, DLY	PD, VT, CP, MT, MTSQ, DLY	PD, VT, CP, MT, MTSQ, DLY

LEGEND:

AP - Armor Piercing
APICM - Antipersonnel Improved Conventional Munitions
CHEM - Chemical
CP - Concrete Piercing
CPHD - Copperhead
DLY - Delay
DPICM - Dual Purpose Improved Conventional Munitions
FASCAM - Family of Scatterable Mines
HE - High Explosive
HEP-T - High Explosive Plastic Tracer
ILLUM - Illumination
MIN - Minute
MO - Multioption - VT, PD, DLY
MT - Mechanical Time
MTSQ - Mechanical Time Super Quick
NUC - Nuclear
PD - Point Detonating
RAP - Rocket Assisted Projectile
RD - Round
RP - Red Phosphorus
RPM - Rounds per Minute
SMK - Smoke
TIME - Adjustable Time Delay
VT - Variable Time
WP - White Phosphorus

Table 8-1. Indirect fire weapons capabilities.

8-3. FIRE PLANNING PROCESS

The fire-planning process begins at higher echelons and continues down through the company FSOs and other key personnel, to include the platoon leader and FO. The fire support plan must support the maneuver plan; it should not be planned separately. The effectiveness of this process depends on continuous interaction and feedback from the lower echelons upward. Key functions include refinement and confirmation of target locations and execution of events. Specific responsibilities include those listed on the fire support execution matrix. The matrix shows the leader who bears responsibility for each target, when the responsible party should execute the target, and what means (artillery, mortars, CAS) he or they should use. Figure 8-1 shows an example of a company fire support matrix. It shows maneuver elements along the left side and the different phases of the mission along the top. It shows the platoon's role throughout the operation. The preparer should always include the platoon as a subunit in the matrix.

	AA	LD	CP7	OBJ GREEN
FSO	INITIAL PREP / 1ST PLT	FIRE CA 3012 CFL CHUCK / 2D PLT	FIRE C1A GROUP / 3D PLT	ACS (CAS) 1400Z
1ST PLT	FA FPF	CFL CHUCK		MORTAR FPF
2D PLT	FA FPF	MORT PRI TGT CA 3014 CFL CHUCK		FA FPF
3D PLT	MORTAR FPF	CFL CHUCK	MORT PRI TGT CA 3017 / 2D PLT	FA FPF

Figure 8-1. Example of a company fire support matrix.

8-4. CALL FOR FIRE

The battalion fire support execution matrix may require the platoon to call for and adjust its own indirect fire support. The matrix also might designate platoon targets. The platoon uses these preplanned artillery targets to call for and adjust indirect fire. Either a soldier or an FO can prepare and request a call for fire. However, to receive immediate indirect fire support, the observer must plan targets and follow proper call-for-fire procedures. If available, he should use a GPS and laser range finder. The call for fire must include certain elements and might include others.

a. **Required Elements.** Calls for fire must include--

(1) ***Observer Identification and Warning Order***. Observer identification tells the fire direction center (FDC) who is calling. It also clears the net for the duration of the call. The

warning order tells the FDC the type of mission and the method of locating the target. The types of indirect fire missions are as follows:

- Adjust fire--Use this command when uncertain of target location.
- Fire for effect--Use this command for rounds on target; no adjustment.
- Suppress--Use this command to obtain fire quickly.
- Immediate suppression--Use this command to indicate the platoon is already being engaged by the enemy; must give target identification.

(2) ***Target Location Methods.*** The observer sends the target location as six digits (letters and numbers). Before the first adjusting rounds are fired, the observer gives the direction in mils. The FDC must know the observer's exact location. The observer sends observer-target (OT) direction (to the nearest 10 mils) from his position to the target. He specifies which target location method to use:

- Grid (Figure 8-2).
- Polar (Figure 8-3).
- Shift from a known point (Figure 8-4 and Figure 8-5, page 8-8).

INITIAL FIRE REQUEST	
Observer	FDC
Z57, THIS IS 271, ADJUST FIRE, OVER.	THIS IS Z57, ADJUST FIRE, OUT.
GRID NK180513, OVER.	GRID NK180513, OUT.
INFANTRY PLATOON IN THE OPEN, ICM IN EFFECT, OVER.	INFANTRY PLATOON IN THE OPEN, ICM IN EFFECT, OVER.
MESSAGE TO OBSERVER	
FDC	Observer
Z, 2 ROUNDS, TARGET, AF1027, OUT.	Z, 2 ROUNDS, TARGET IS AF1027, OVER.
DIRECTION 1680, OUT.	DIRECTION 1680, OVER.
NOTE: Send direction before or with the first subsequent correction.	

Figure 8-2. Example fire mission (grid).

INITIAL FIRE REQUEST	
Observer	FDC
Z56, THIS IS Z31, FIRE FOR EFFECT, POLAR. OVER.	THIS IS Z56, FIRE FOR EFFECT, POLAR, OUT.
DIRECTION 4520, DISTANCE 2300, DOWN 35. OVER.	DIRECTION 4520, DISTANCE 2300, DOWN 35, OUT.
INFANTRY COMPANY IN OPEN, ICM, OVER.	INFANTRY COMPANY IN OPEN, ICM, OVER.
MESSAGE TO OBSERVER	
FDC	Observer
Y, VT, 3 ROUNDS, TARGET, AF2036, OUT.	Y, VT, 3 ROUNDS, TARGET AF2036, OVER.

Figure 8-3. Example fire mission (polar plot).

INITIAL FIRE REQUEST	
Observer	FDC
H66 THIS IS H44, ADJUST FIRE, SHIFT AA7733, OVER.	THIS IS H66, ADJUST FIRE, SHIFT AA7733, OUT.
DIRECTION 5210, LEFT 380, ADD 400, DOWN 35, OVER.	DIRECTION 5210, LEFT 380, ADD 400, DOWN 35, OUT
COMBAT OP IN OPEN, ICM IN EFFECT, OVER.	COMBAT OP IN OPEN, ICM IN EFFECT, OUT.
MESSAGE TO OBSERVER	
Observer	FDC
H, 1 ROUND, TARGET AA7742, OVER.	H, 1 ROUND, TARGET, AA7742, OUT.
NOTE: Shift from a known point is performed when the observer and FDC have a common known point. The observer sends OT line, then determines the lateral and range shifts.	

Figure 8-4. Example fire mission (shift from a known point).

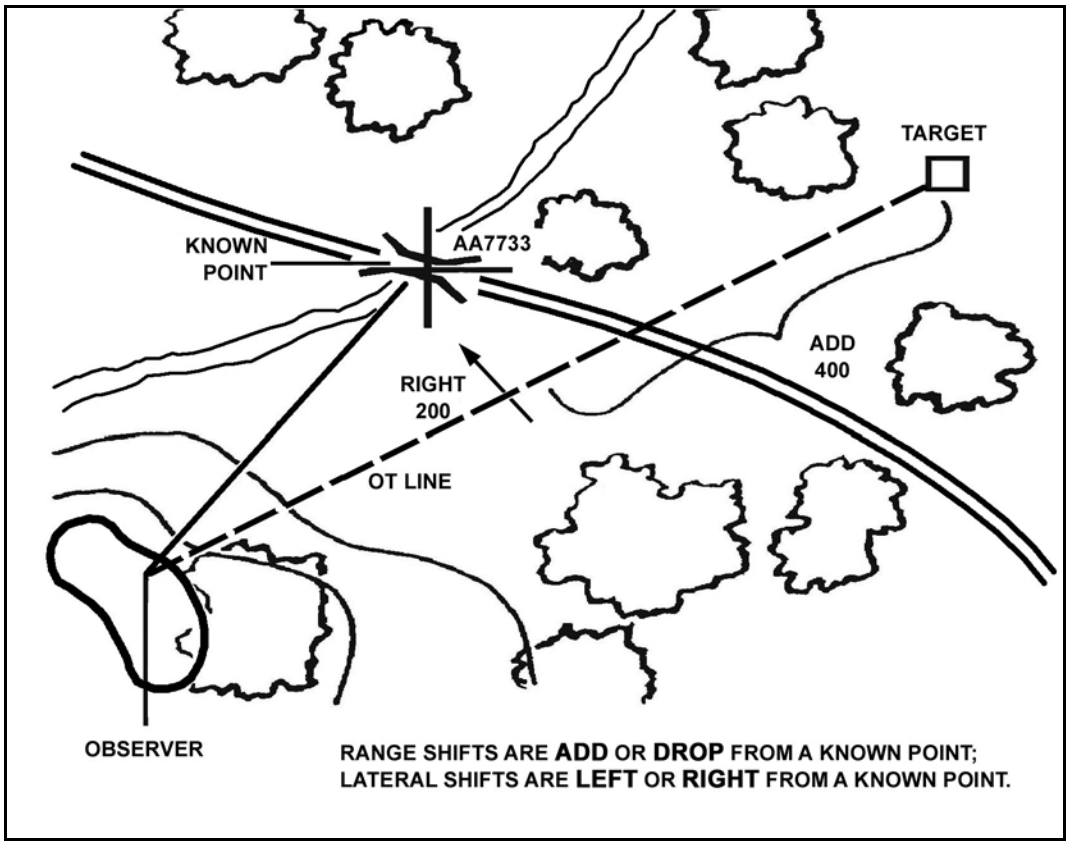


Figure 8-5. Lateral and range shifts from a known point.

(3) ***Target Description.*** Give a brief description of the target using the acronym "SNAP":

- Size and or Shape.
- Nature and or Nomenclature.
- Activity.
- Protection and or Posture.

b. **Optional Elements.** A call for fire also might include the following information:

(1) ***Method of Engagement***. The method of engagement consists of danger-close (if applicable) and distribution, ammunition, and trajectory (DAT).

(2) ***Method of Fire and Control.*** The method of fire and control indicates the desired manner of attacking the target, whether the observer wants to control the time or delivery of fire, and whether he can observe the target. The observer announces methods of fire and control:

- At My Command--fire at observer's command.
- When Ready--standard method of fire control.
- Cannot Observe--fire will not be observed.
- Time on Target--rounds land at specified time.
- Continuous Illumination--FDC determines when to fire.
- Coordinated Illumination--observer determines when to fire.
- Cease Loading--used when two or more rounds are in effect (causes loader to stop loading).

- Check Firing--temporary halt in firing.
- Continuous Fire--will continue to fire unless told to stop.
- Repeat--will repeat last data fired by the firing unit.

(3) ***Refinement and End of Mission.*** The observer should observe the results of the fire for effect (FFE) and then take whatever action is necessary to complete the mission:

- Correct any adjustments.
- Record as target.
- Report battle damage assessment.

(4) ***Danger-Close.*** Danger-close information is included when applicable.

- FA and mortars--Danger-close target is within 600 meters of friendly troops.
- Naval gunfire--Danger-close target is within 750 meters when using 5-inch or smaller guns (1,000 meters for larger naval guns).
- Method of adjustment--During danger-close missions, the FO uses only the creeping method of adjustment (corrections of no more than 100 meters).

8-5. ADJUST FIRE

Once he calls for fire, the observer adjusts the fire onto the target. If he has accurately located the target, he requests fire for effect. If the observer cannot locate the target (because of deceptive terrain, lack of identifiable terrain features, poor visibility, or an inaccurate map), he adjusts the impact point of the rounds. One artillery piece or mortar adjusts fire. The observer chooses an adjusting point: for a destruction mission (precision fire), the target is the adjusting point; for an area target (area fire), the observer picks a well-defined adjusting point close to the center. The observer spots the first and each successive adjusting round, and he sends range and deviation corrections back to the FDC until rounds hit the target. The observer spots by relating the round's point of impact to the adjusting point. (See FM 6-30 for a more detailed discussion of adjusting mortar and artillery fire.)

a. **Deviation Spotting.** Deviation (left or right) spotting involves measuring the horizontal angle (in mils) between the burst and the adjusting point (Figure 8-6, page 8-10). A burst to the right (left) of the target is spotted as "(so many) mils right (left)." The observer uses an angle-measuring device to determine deviation. He might use the mil scale on his binoculars (Figure 8-7, page 8-10) or his fingers and hand (Figure 8-8, page 8-11).

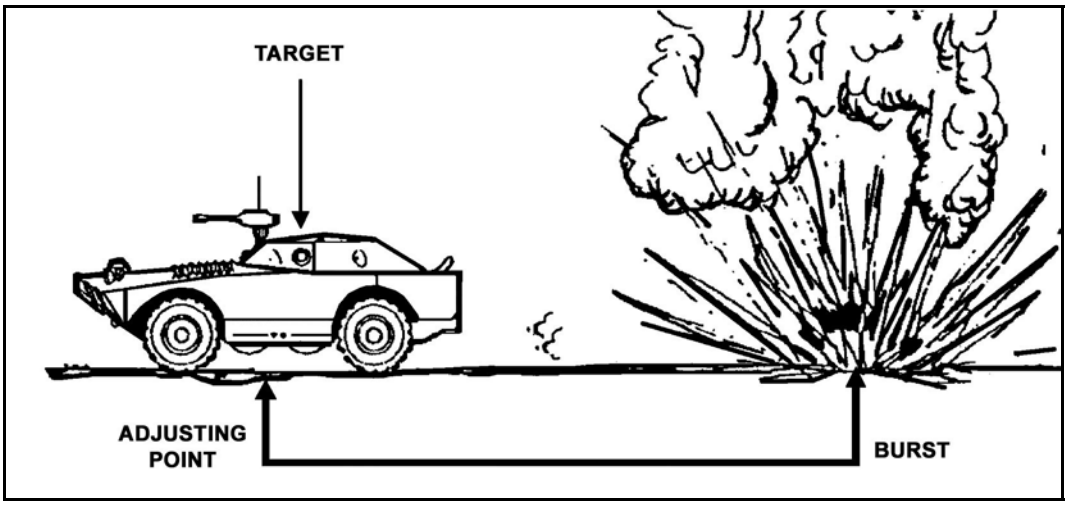


Figure 8-6. Deviation spotting.

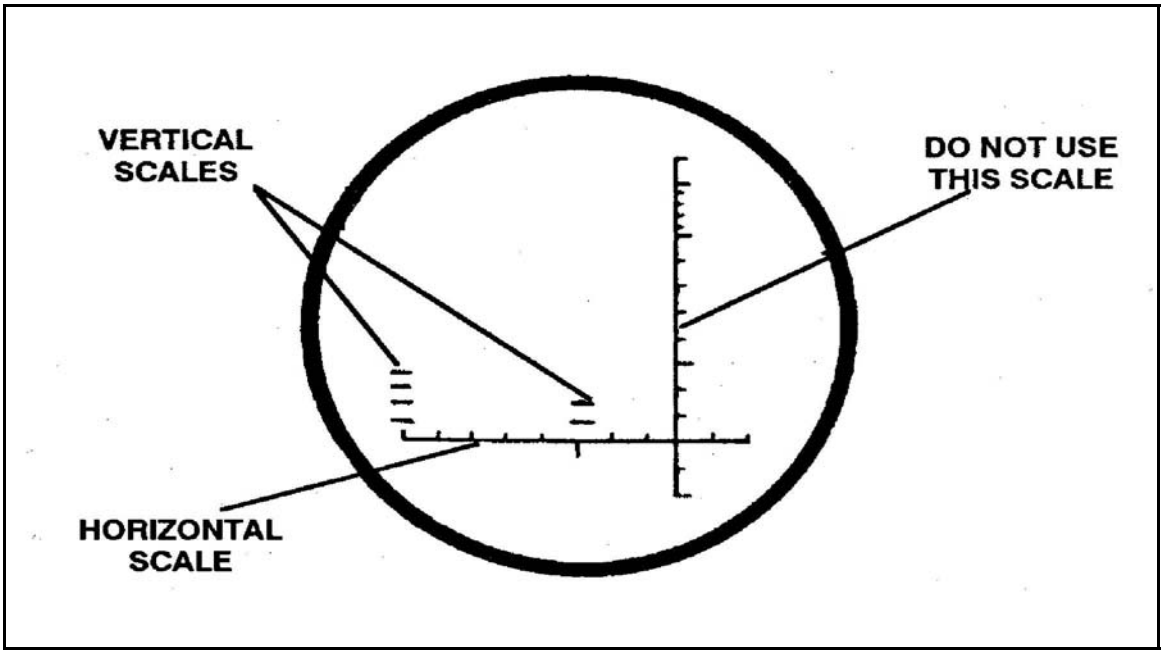


Figure 8-7. Mil scale on M17 binoculars.

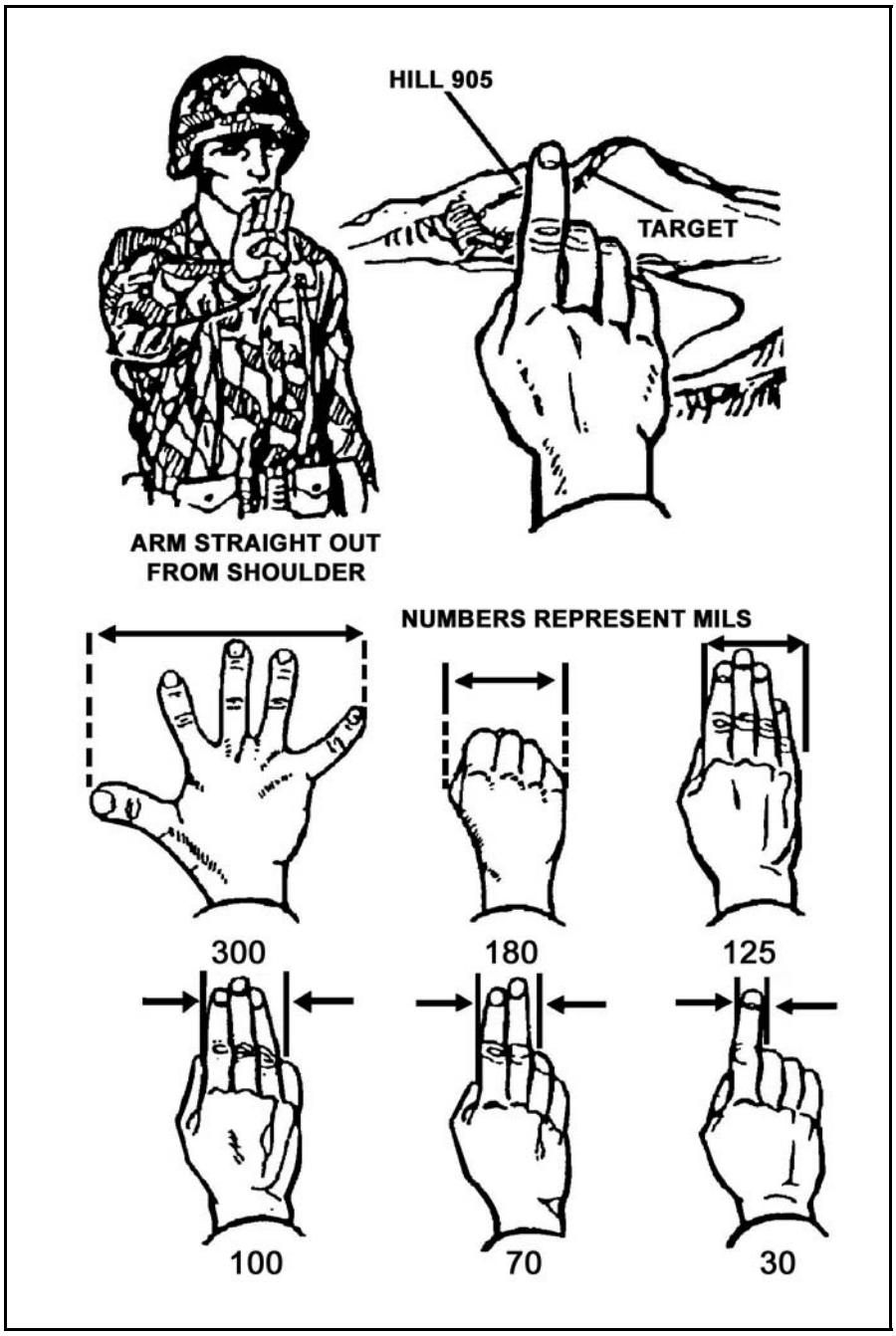


Figure 8-8. Hand and fingers used to determine deviation.

(1) On binoculars, the horizontal scale is divided into 10-mil increments and is used for measuring horizontal angles. The vertical scales in the center and on the left of the reticle are divided into 5-mil increments and are used for measuring vertical angles. The scale on the right, if present, is no longer used.

(2) A burst on the OT line is spotted as "line." Deviation (left or right) should be measured to the nearest 5 mils for area targets, with measurements taken from the center of the burst. Deviation for a destruction mission (precision fire) is estimated to the nearest mil.

Figure 8-9 shows the adjusting point at the center of the binocular horizontal scale.

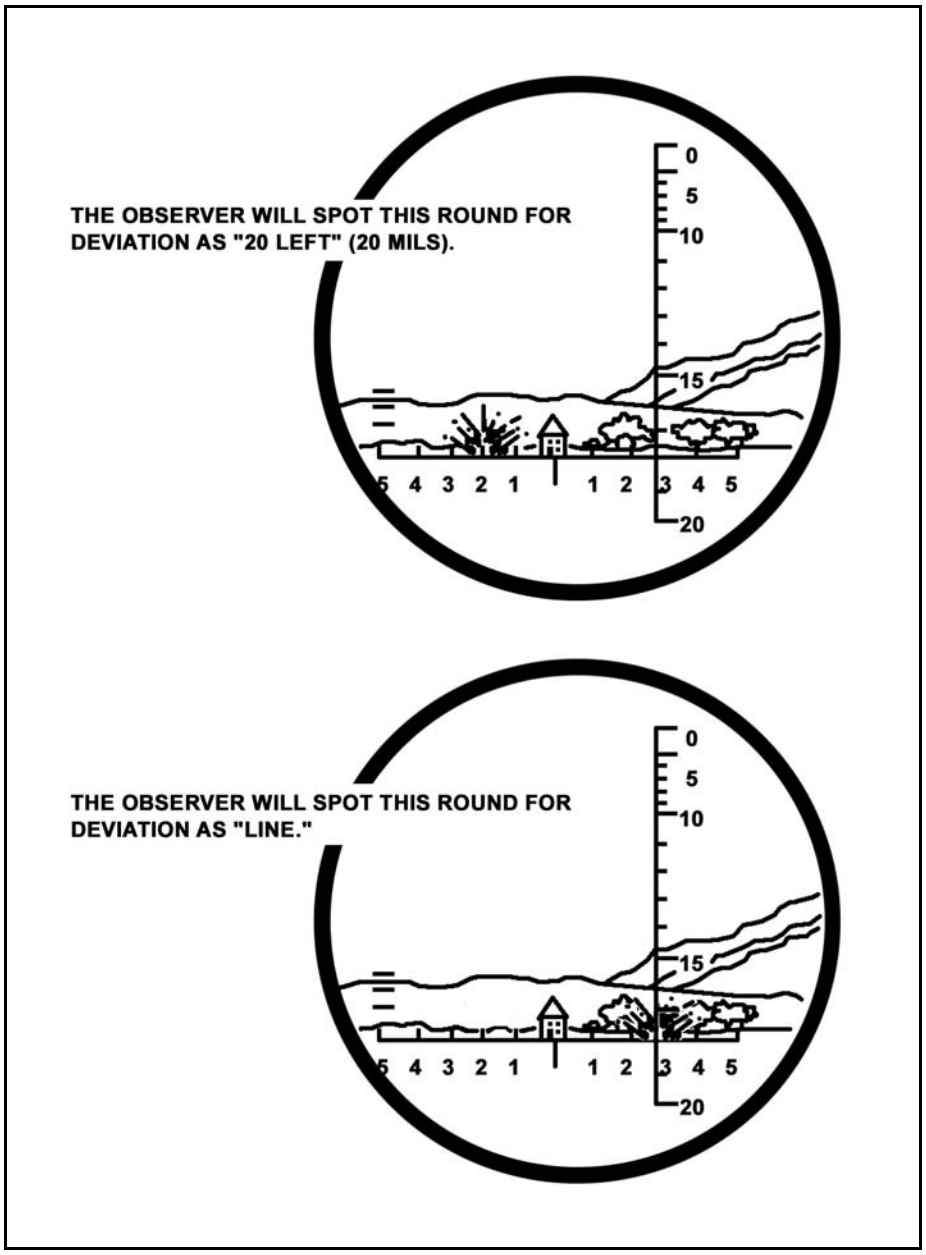


Figure 8-9. Deviation spotting with binoculars [2nd spotting is the same as the 1st]

b. **Deviation Correction.** Deviation correction is the distance (in meters) the burst must be moved left or right to be on line between the observer and the target. Once the mil deviation has been determined, the observer converts it into a deviation correction (in meters). He sends it to the FDC either when sending the range correction for the next adjusting round or when calling for fire for effect.

(1) The deviation correction is determined by multiplying the observed deviation in mils by the distance from the observer to the target in thousands of meters (the OT factor). The

result is expressed to the nearest 10 meters (see Example 1 below). A minor deviation correction (10 to 20 meters) should be made in adjustment of precision fire.

(2) In adjustment of area fire, small deviation corrections (20 meters or less) can be ignored except when a small change determines a definite range spotting. Throughout the adjustment, the observer moves the adjusting rounds close enough to the OT line so that range spotting is accurate.

(3) If the OT distance is greater than 1,000 meters, round to the nearest thousand and express it in thousands of meters (Example 2). If the OT distance is less than 1,000 meters, round to nearest 100 meters and express it as a decimal in thousands of meters (Example 3).

EXAMPLE 1:
Observer deviation 20 mils
OT distance 2,000 meters
OT factor 2
Observer deviation x OT factor = deviation correction.
20 x 2 = 40 meters

EXAMPLE 2:
OT distance 4,200 meters—OT factor 4.0
OT distance 2,700 meters—OT factor 3.0

EXAMPLE 3:
OT distance 800 meters—OT factor 0.8

c. **Angle T.** Angle T (Figure 8-10, page 8-14) is the angle formed by the intersection of the gun-target line and the OT line with its vertex at the target. If angle T is 500 mils or greater, the FDC should tell the observer. If this occurs, the observer continues to use the OT factor to make his deviation corrections. If he sees that he is getting more of a correction than he has asked for, the observer should consider cutting the corrections to better adjust rounds onto the target.

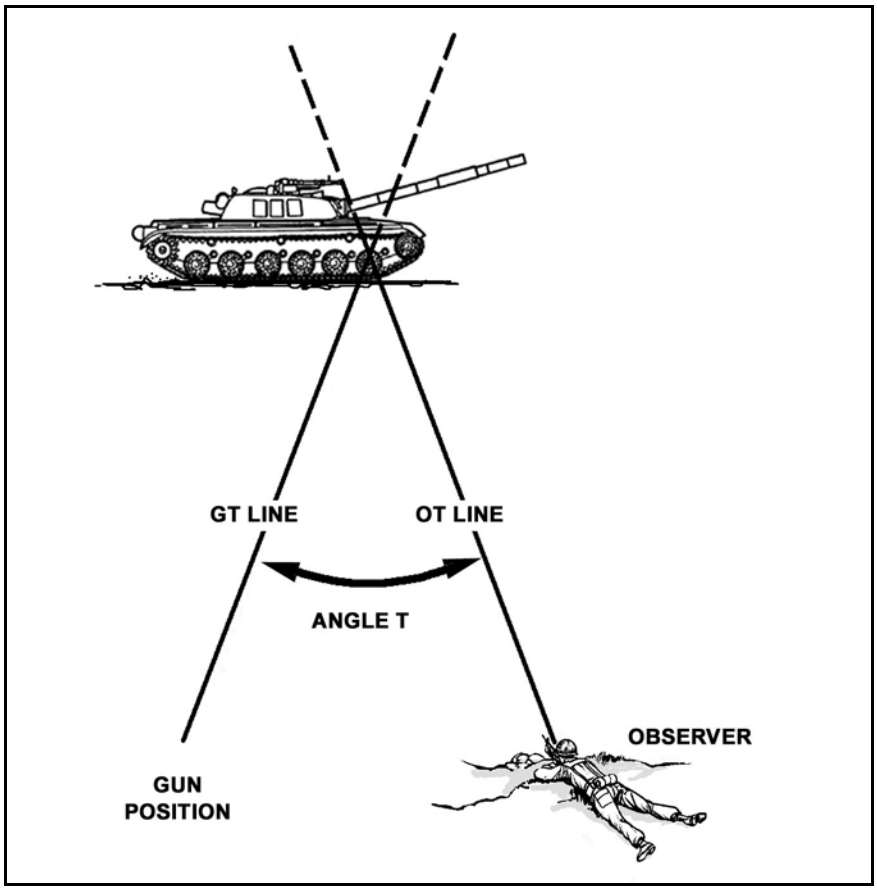


Figure 8-10. Angle T.

d. **Range Spotting.** Range spotting (short or over) requires adjusting the range to obtain fire on the target. An adjusting round's burst on or near the OT line gives a definite range spotting. If he cannot make a definite spotting, the observer announces a "lost" or "doubtful" spotting. In these situations only, he gives the deviation correction to the FDC.

(1) ***"Over."*** The observer sees the burst beyond the adjusting point.

(2) ***"Short."*** The observer sees the burst between himself and the adjusting point.

(3) ***"Target."*** The observer sees the burst hit the target. He uses this spotting only in precision fire (destruction missions).

(4) ***"Range Correct."*** The observer believes that the burst occurred at the correct range.

(5) ***"Doubtful."*** The observer sees the burst but cannot tell whether it occurred over, short, target, or range correct.

(6) ***"Lost, Over" or "Lost, Short."*** The observer cannot see the burst, but he knows that it occurred beyond or short of the adjusting point.

e. **Range Correction.** With each successive correction, the *adjusting round* lands over or short of the *adjusting point*, but closes on the target.

(1) ***Bracketing.*** Bracketing brings fire on a target. Time is important, especially while targets move or seek cover from fire. Accuracy of data and speed of adjustments determine the effectiveness of the fire. To reduce adjustment time, the observer tries to bracket the target with the first two or three adjusting rounds.

(2) ***Successive Bracketing.*** The observer calls FFE when a range correction brings the round within 50 meters of the adjusting point. He also calls FFE when the firer splits a 100-meter bracket; for example, "Drop 50, fire for effect." This technique is called successive bracketing (Figure 8-11). When bracketing, the observer uses the following guide to determine his first range correction:

- OT between 1,000 to 2,000 meters--add or drop at least 200 meters.
- OT greater than 2,000 meters--add or drop at least 400 meters.

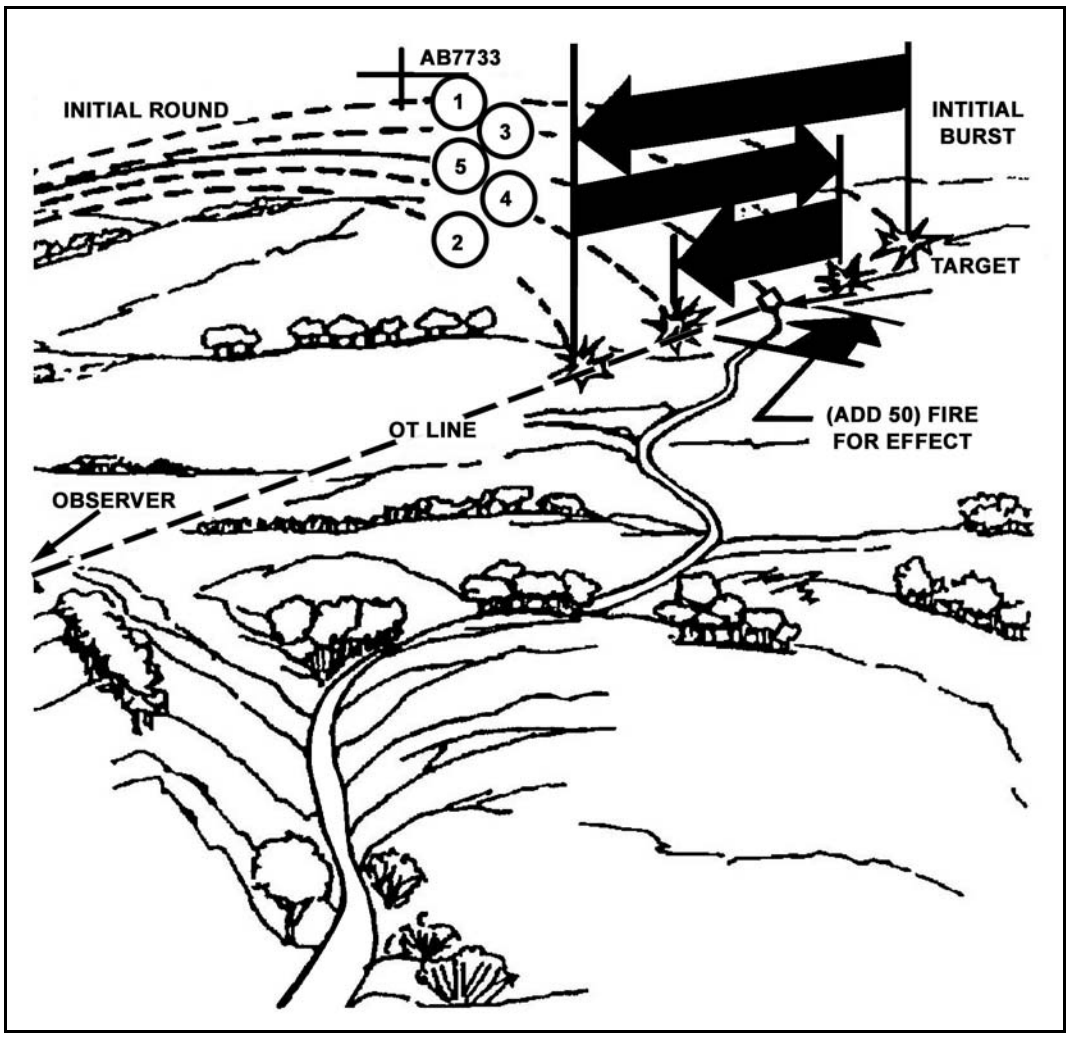


Figure 8-11. Successive bracketing technique.

(3) ***Hasty Bracketing.*** The effect on the target decreases as the number of rounds used in adjustment increases. Successive bracketing ensures that FFE rounds hit within 50 meters of the adjusting point. Hasty bracketing offers a quicker alternative to successive bracketing. A successful hasty bracket depends on a thorough terrain analysis, which gives the observer an accurate initial target location. For his first correction, the observer receives a bracket similar to that used for successive bracketing. Once the observer receives the initial bracket, he uses it like a yardstick to determine the subsequent correction. He then sends the FDC the

correction to move the rounds to the target and to fire for effect (Figure 8-12). Hasty bracketing improves with observer experience and judgment.

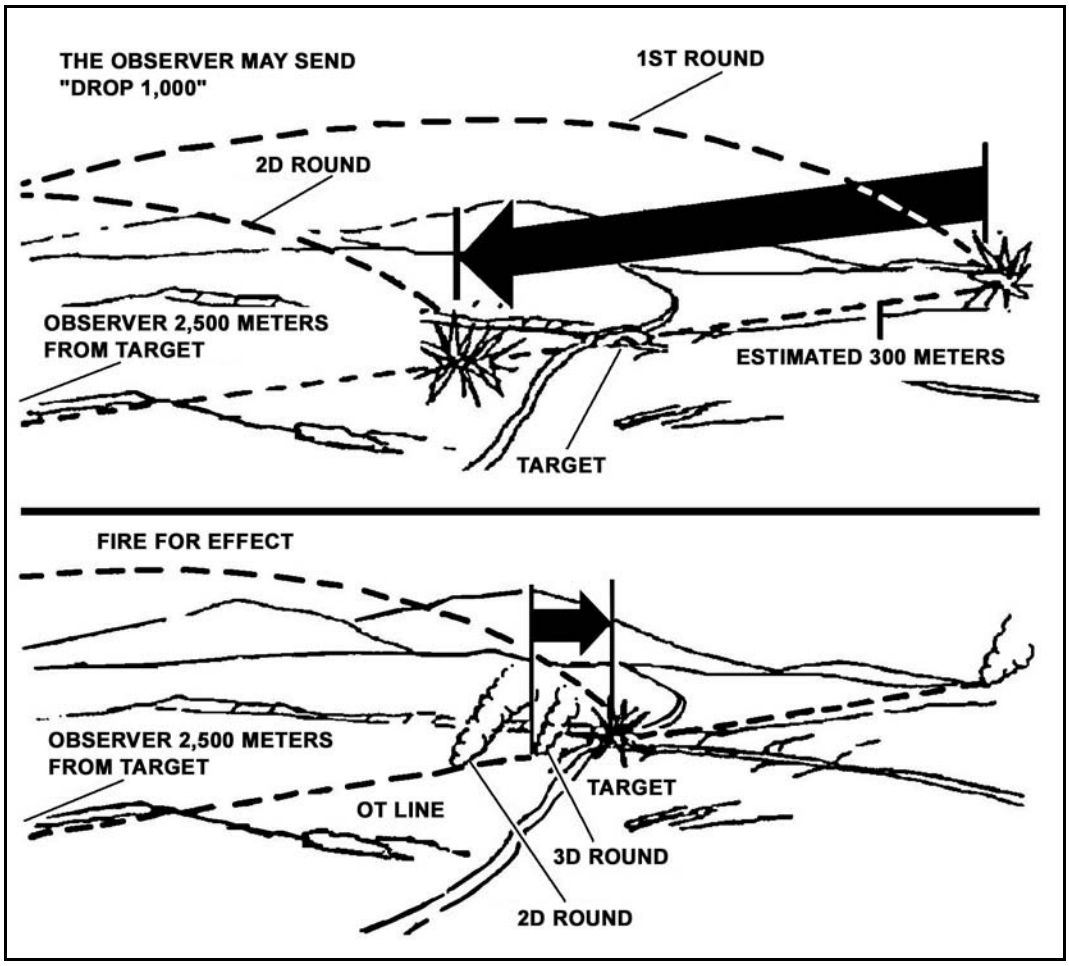


Figure 8-12. Hasty bracketing technique.

(4) ***Creeping Method.*** In danger-close situations the observer uses the creeping method of adjustment. The observer calls for the first round, deliberately overshooting the target. He adjusts rounds in 100-meter increments or less until the fire hits the target (Figure 8-13). This method requires more time and ammunition than other methods; therefore, the observer uses it only when he must consider safety first.

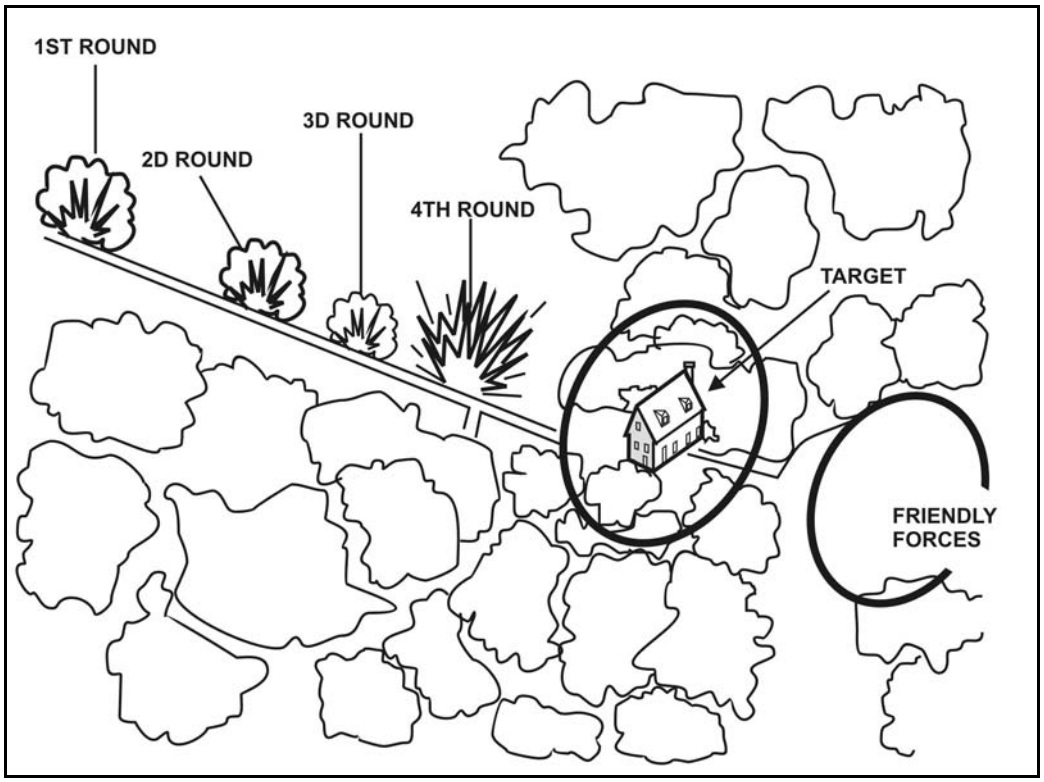


Figure 8-13. Creeping method of adjustment.

8-6. MORTAR SUPPORT

The battalion mortar platoon has both 120-mm and 81-mm mortars. The company has 120-mm and 60-mm mortars. The battalion and company mortars provide immediate indirect fire support. Using mortars, the platoon can quickly place a heavy volume of accurate, sustained fire on the enemy. Mortar rounds can strike targets that low-angle fires cannot reach. These include targets on reverse slopes, in narrow ravines or trenches, and in forests or towns, among others. The platoon will receive the preponderance of indirect fire support from mortars.

a. **Types of Mortar Support.** Mortars provide the following types of effective support.

(1) ***Suppression.*** The platoon can fire HE rounds to force the enemy to button up or move to less advantageous positions. Only a direct hit, however, will destroy an armored vehicle.

(2) ***Smoke***. The platoon uses white phosphorus (WP) rounds for obscuration and screening. Mortar smoke builds up more rapidly than artillery smoke. To obscure the enemy's vision, the platoon places smoke on or just in front of his positions. Placing smoke between the enemy and the platoon's position conceals platoon movement. Mortar smoke marks enemy positions to aid in friendly maneuver and to orient direct fires. Scouts must be careful, however, not to allow smoke to work against them by marking their own positions for enemy gunners. When using WP for obscuration and screening, soldiers should remain aware of its incendiary nature.

(3) ***Illumination.*** The platoon uses illumination rounds to light an area or enemy position during periods of limited visibility. Illumination increases the effectiveness of image-intensification devices, which helps with gathering information, adjusting artillery, and

engaging enemy targets. The platoon also uses ground-burst illumination to mark enemy positions and to provide a thermal TRP for control of fires. The platoon must use illumination carefully so as not to illuminate friendly positions. Because US night vision devices work better than those of most potential adversaries, the platoon may not need to illuminate the battlefield at all. Doing so could cause more harm than good by revealing friendly positions.

b. **Capabilities and Limitations.** The advantages of using the mortar platoon include its close working relationship with the platoons, fast response time, and availability for low-density targets. The limitations of mortars are--

- Short-range capability only.
- Few types of ammunition available.
- Mortar elements can carry only limited amounts of ammunition.
- FDC and mortar tubes cannot be linked to AFATDS.
- Vulnerable to radar detection due to high-angle fire.

8-7. FIELD ARTILLERY SUPPORT

The platoon must know how to use artillery support to its best advantage. Artillery often offers the best way to impede and disrupt enemy formations and suppress enemy positions. It can provide immediate, responsive, and accurate fires with a wide variety of munitions. The platoon may receive FA priority of fire.

a. **Capabilities.** In support of the platoon, FA elements can--

- Provide fires in all weather conditions and on all types of terrain.
- Shift and mass fires rapidly.
- Support the battle in depth with long-range fires.
- Provide a variety of conventional shell and fuze combinations.
- Provide continuous fires by careful positioning and timely displacement.

b. **Limitations.** FA support has the following limitations:

- Limited capability against moving targets.
- May require large amounts of ammunition to destroy point targets.
- Firing signature makes it vulnerable to detection.

c. **Munitions.** FA employs a wide variety of munitions that the platoon can tailor to engage different types of targets.

(1) ***High-Explosive.*** The best targets for HE rounds include personnel, field fortifications, and lightly armored vehicles.

(2) ***Smoke.*** The best uses for smoke include obscuring and screening friendly soldiers.

(3) ***Illumination.*** Ideally, these illuminate only the enemy, not friendly forces.

(4) ***White Phosphorus.*** This volatile material effectively obscures friendly soldiers or actions, marks locations, and burns obstacles and equipment.

(5) ***Cannon-Launched Guided Projectiles.*** These projectiles (Copperheads) work best against point targets but require a laser designation system.

(6) ***Improved Conventional Munitions.*** Improved conventional munitions (ICM) work best against personnel targets.

(7) ***Dual-Purpose Improved Conventional Munitions.*** These munitions (DPICM) work best against personnel and light armored vehicles in the open.

(8) ***Scatterable Mines.*** These include *area denial munitions* for use against personnel and *remote antiarmor mines* for use against armored vehicles. An FA battery cannot mix other fire missions with scatterable mine missions. Scatterable mines require slightly more lead time than other FA-delivered munitions.

NOTE: The commander or leader must consider the danger to friendly troops in areas where friendly forces fire antipersonnel (AP) munitions. The potential dud rate of ICM makes maneuver in the area of an ICM field hazardous.

8-8. FIRE DIRECTION ASSETS

The FIST is organic to the SBCT infantry company. The company FSO is the unit fire support coordinator. He works with the company commander during combat operations to successfully accomplish all company-level fire support tasks. While the maneuver commander is responsible for integrating fire support and maneuver, the FSO must understand the scheme of maneuver as well as the company commander does. Based on the commander's guidance, the FSO devises his fire support plan, which must be presented to the commander for approval. FSO responsibilities include the following:

- Plan, coordinate, and execute fire support.
- Advise the company commander on fire support matters to include capabilities, limitations, and employment of all fire support assets available to support his operation.
- Ensure the company fire support plan is developed as an integral part of the company OPORD and or OPLAN and that essential fire support tasks (EFSTs) are adequately addressed in maneuver company rehearsals.
- Make recommendations to integrate fire support assets (FA and mortars) into the maneuver commander's battle plan.
- Keep key personnel informed of pertinent information (by spot reports and situation reports).
- Train the FIST and FOs in applicable fire support matters.
- Request, adjust, and direct all types of fire support.
- Ensure the fire support plan and or execution matrix is prepared and disseminated to key personnel.
- Advise the company commander on positioning and use of company mortars.
- Allocate FOs and other observers to maintain surveillance of target and named areas of interest.
- Integrate and employ combat observation and laser teams (COLTs) and or Strikers (when allocated) into planned operations.
- Plan, direct, and manage the employment of observer platforms and laser equipment where they will best support the commander's concept of operation.
- Provide emergency control of CAS and naval gunfire (NGF) in the absence of qualified personnel.

8-9. PLATOON FORWARD OBSERVER DUTIES AND RESPONSIBILITIES

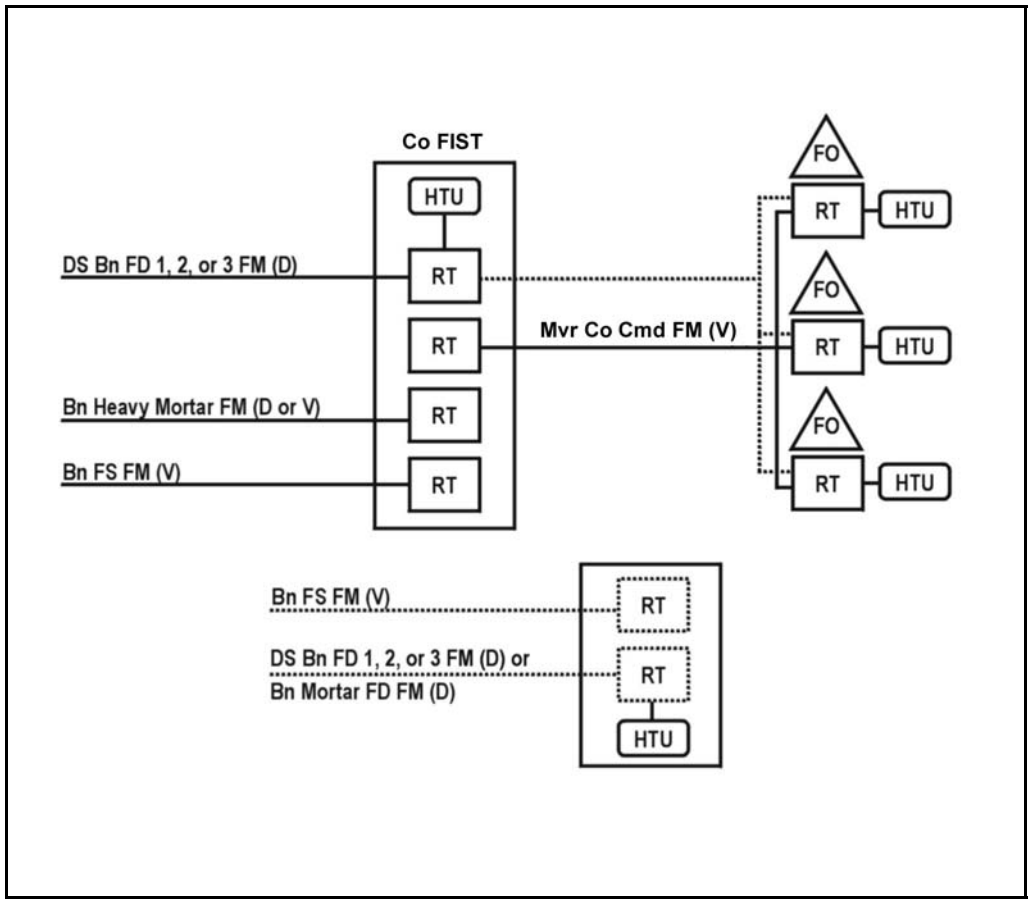
As the platoon's fire support representative, the primary duty of the FO is to locate targets and call for and adjust indirect fire support. Additional responsibilities include the following:

- Refine or submit key targets for inclusion in the company fire plan.
- Prepare, maintain, and use situation maps.
- Establish and maintain communications with company FIST.
- Advise the platoon leader as to the capabilities and limitations of available indirect fire support.
- Report battlefield intelligence.
- Laser designate targets when required.

8-10. MANEUVER COMPANY FIST FIRE REQUEST CHANNELS

The FIST serves as the net control system (NCS) on the company fire support net. The FIST relays the call for fire to supporting artillery on a digital net or sends the fire mission to the mortar platoon or section. The command net allows the FIST to monitor unit operations. It links the FIST to the commander and platoon leaders for planning and coordination.

a. **Company Communications Nets.** Example communications nets for the company FIST are shown in Figure 8-14. Net assignments for platoon FOs may vary. In some cases, the FSO may decide to have all FOs on the mortar net (voice or digital).



8-14. Company FIST communications.

NOTE: The diagrams in figure 8-14 (page 8-20) present a model solution. Standard net structures should be outlined in unit TSOPs and should be kept current as changes in procedures and or systems occur.

b. **Quick Fire Channel.** A quick fire channel is established to directly link an observer (or other target executor) with a weapon system (Figure 8-15). Quick fire channels may be either voice or digital nets. Quick fire channels within a maneuver brigade are normally established on FA or mortar nets. These channels are designed to expedite calls for fire against high profile targets (HPTs) or to trigger preplanned fires. Quick fire channels also may be used to execute fires for critical operations or phases of the battle. Examples include linking a COLT or Striker with a battery or platoon FDC for counter reconnaissance fires or an AN-TPQ-37 radar with the multiple launch rocket system (MLRS) battery FDC for counterfires. Copperhead missions can best be executed by using quick fire channels.

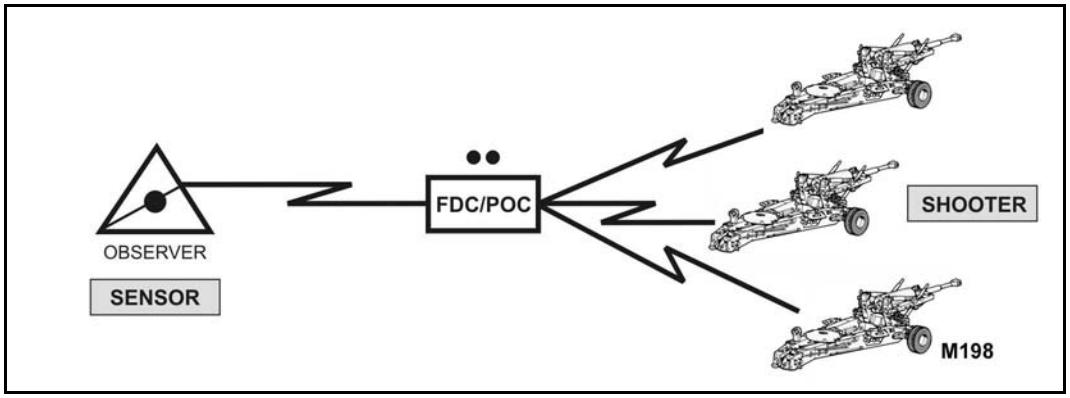


Figure 8-15. Quick fire channel illustrating sensor-to-shooter link.

8-11. CLOSE AIR SUPPORT

All services can provide CAS to the battalion. CAS missions are flown against hostile targets near friendly forces. The forward air controller (FAC) is the battalion commander's expert in planning, requesting, and executing CAS missions. The FAC serves as a link between the maneuver element and the attacking aircraft. The platoon may provide information that the FAC or tactical air control party (TACP) uses to target enemy forces. Soldiers may provide emergency control if an FAC, FSO, or FO is not available (the battalion commander accepts responsibility for friendly casualties). This is possible only with aircraft equipped with FM radios. Most U.S. Air Force, Navy, and Marine Corps fixed-wing aircraft only have UHF radios (A/OA-10, F16, AV-8B, F-14, F/A-18, and AC-130). (For additional information, see FM 6-30.) The platoon also may provide information on battle damage as observed. Figure 8-16, page 8-22, shows the format for assessing and reporting battle damage.

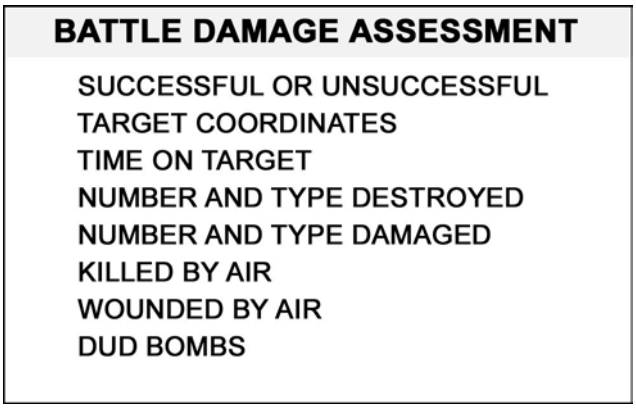


Figure 8-16. Format for battle damage assessment.

a. **AC-130 Gunship.** If the enemy air defense is low, the battalion requests CAS from an AC-130 gunship. The AC-130 provides effective fires during day and night operations and flies CAS and special operations. The aircraft contains one 40-mm gun, two 20-mm guns, two 7.62-mm miniguns, and one 105-mm howitzer. It is equipped with sensors and target acquisition systems that include forward-looking infrared radar and low-light television.

b. **Marking Friendly Positions.** Whenever possible, friendly positions are marked to enhance safety and to provide target area references. Methods of marking friendly positions are shown in Table 8-2, pages 8-23 and 8-24.

METHOD	DAY/ NIGHT	ASSETS	FRIENDLY MARKS	TARGET MARKS	REMARKS
SMOKE	D/N	ALL	GOOD	GOOD	Easily identifiable, may compromise friendly position, obscure target, or warn of fire support employment. Placement may be difficult due to structures.
SMOKE (IR)	D/N	ALL/ NVD AT NIGHT	GOOD	GOOD	Easily identifiable, may compromise friendly position, obscure target, or warn of fire support employment. Placement may be difficult due to structures. Night marking is greatly enhanced by the use of IR reflective smoke
ILLUM, GROUND BURST	D/N	ALL	N/A	GOOD	Easily identified, may wash out NVDs.
SIGNAL MIRROR	D	ALL	GOOD	N/A	Avoids compromise of friendly location. Dependent on weather and available light and may be lost in reflections from other reflective surfaces (windshields, windows, water)
SPOT LIGHT	N	ALL	GOOD	MARGINAL	Highly visible to all. Compromises friendly position and warns of fire support employment. Effectiveness is dependent upon degree of urban lighting.
IR SPOT LIGHT	N	ALL NVD	GOOD	MARGINAL	Visible to all with NVGs. Less likely to compromise than overt light. Effectiveness dependent upon degree of urban lighting.
IR LASER POINTER (below .4 watts)	N	ALL NVG	GOOD	MARGINAL	Effectiveness dependent upon degree of urban lighting.
IR LASER POINTER (above .4 watts)	N	ALL NVD	GOOD	GOOD	Less affected by ambient light and weather conditions. Highly effective under all but the most highly lit or worst weather conditions. IZLID-2 is the current example.
VISUAL LASER	N	ALL	GOOD	MARGINAL	Highly visible to all. Risk of compromise is high Effectiveness dependant upon degree of urban lighting.
LASER DESIG-NATOR	D/N	PGM OR LST EQUIP-PED	N/A	GOOD	Highly effective with PGM. Very restrictive laser acquisition cone and requires line of sight to target. May require pre-coordination of laser codes

Table 8-2. Methods of marking friendly positions.

METHOD	DAY/ NIGHT	ASSETS	FRIENDLY MARKS	TARGET MARKS	REMARKS
TRACERS	D/N	ALL	N/A	MARGINAL	May compromise position. May be difficult to distinguish mark from other gunfire. During daytime use, may be more effective to kick up dust surrounding target.
ELECTRON-IC BEACON	D/N	SEE REMARKS	EXCELLENT	GOOD	Ideal friendly marking device for AC-130 and some USAF fixed wing (not compatible with Navy or Marine aircraft). Least impeded by urban terrain. Can be used as a TRP for target identification. Coordination with aircrews essential to ensure equipment and training compatibility.
STROBE (OVERT)	N	ALL	MARGINAL	N/A	Visible by all. Effectiveness dependent upon degree of urban lighting.
STROBE (IR)	N	ALL NVD	GOOD	N/A	Visible to all NVDs. Effectiveness dependent upon degree of urban lighting. Coded strobes aid in acquisition.
FLARE (OVERT)	D/N	ALL	GOOD	N/A	Visible by all. Easily identified by aircrew.
FLARE (IR)	N	ALL NVD	GOOD	N/A	Visible to all NVDs. Easily identified by aircrew.
GLINT/IR PANEL	N	ALL NVD	GOOD	N/A	Not readily detectable by enemy. Very effective except in highly lit areas.
COMBAT IDENTIFI-CATION PANEL	D/N	ALL FLIR	GOOD	N/A	Provides temperature contrast on vehicles or building. May be obscured by urban terrain.
VS-17 PANEL	D	ALL	MARGINAL	N/A	Only visible during daylight. Easily obscured by structures.
CHEMICAL HEAT SOURCES	D/N	ALL FLIR	POOR	N/A	Easily masked by urban structures and lost in thermal clutter. Difficult to acquire, can be effective when used to contrast cold background or when aircraft knows general location.
SPINNING CHEM-LIGHT (OVERT)	N	ALL	MARGINAL	N/A	Provides unique signature. May be obscured by structures. Provides a distinct signature easily recognized. Effectiveness dependent upon degree of urban lighting.
SPINNING CHEM-LIGHT (IR)	N	ALL NVD	MARGINAL	N/A	Provides unique signature. May be obscured by structures. Effectiveness dependent upon degree of urban lighting.

Table 8-2. Methods of marking friendly positions (continued).

8-12. ATTACK HELICOPTERS

The primary mission of attack helicopter units is to destroy armor and mechanized forces. Employing attack helicopters in combined arms operations increases the lethality of ground maneuver forces.

a. **Aircraft Characteristics.** The AH-64A Apache, the AH-64D Longbow Apache, the OH-58D Kiowa Warrior, and the AH-1W or AH-1Z (USMC) are employed in attack operations. Table 8-3 provides a comparison of the weapon systems and armaments on these attack helicopters. (The table also lists weaponry for the AH-1 Cobra which is no longer in the active Army inventory but might be used to provide attack support in joint operations with U.S. Marine units.)

AIRCRAFT TYPE	WEAPONS SYSTEMS						
	Hellfire/TOW [1]		Air-to-Air Stinger	2.75-inch (70-mm) rockets	Cal .50 MG (rds)	20-mm cannon (rds)	30-mm chain gun (rds)
AH-1 [2]		8		76		750	
AH-64A [3]	16			76			1,200
AH-64D [3]	[4] 16		4	76			1,200
OH-58D [2,3]	4		4	14	500		
AH-1W/Z [5]							
Weapons Range (Max)	8 km	3,750 m	5+ km	8 km	2 km	2 km	4 km

Numbers in each column indicate the maximum load for each system.

1 The AH-1 uses the TOW missile as its armor engagement weapon instead of the Hellfire missile.

2 This aircraft carries one weapon system on each side (Hellfire, TOW, or both; air-to-air Stinger; and 2.75-inch rocket).

3 Aircraft has a laser for target designation and an ATHS.

4 Hellfire/Hellfire II.

5 USMC helicopters will have varied weapons loads. During coordination, request on-board weapon status.

Table 8-3. Helicopter weapon systems.

b. **Close Combat Attack.** The close combat attack is a technique for directing lethal fires within the context of a preplanned mission. It does not replace the integrated military decision-making process (MDMP) between ground maneuver and aviation elements.

(1) To request immediate close combat attack, the ground unit in contact executes a face-to-face coordination or uses a radio transmission to provide a situation update to the attack aircraft (METT-TC permitting). This situation update contains essential elements from the aviation close combat attack coordination checklist (Figure 8-17, page 8-26).

(2) After receipt of a request for immediate close combat attack, the attack team leader informs the ground unit leader of the battle position, attack-by-fire position, or the series of positions his team will occupy that will provide the best observation and fields of fire into

the engagement or target area. The attack team leader then provides the ground maneuver unit leader with his concept for the team's attack on the objective.

(3) Upon mission completion, the attack team leader provides the ground maneuver commander a battle damage assessment (BDA) of the intended target.

CLOSE COMBAT ATTACK CHECKLIST

1. Enemy situation--specific target identification.
2. Friendly situation--location and method of marking friendly positions.
3. Ground maneuver mission and scheme of maneuver.
4. Attack aircraft scheme of maneuver.
5. Planned engagement area and BP/SBF position.
6. Method of target marking.
7. Fire coordination and fire restrictions.
8. Map graphics update.
9. Request for immediate aviation close fight support--used for targets of opportunity or for ground-to-air target handoff.

Figure 8-17. Close combat attack coordination checklist.

Section III. COMBAT ENGINEER SUPPORT

The two core qualities of the SBCT infantry platoon are high mobility and the ability to achieve decisive action through dismounted infantry assault. At the tactical level, overmatching mobility is critical to the success of the force. Given the significance of tactical mobility to the SBCT's successful operations, the SBCT engineers are essential.

8-13. MEDIUM ENGINEER COMPANY

The SBCT's organic medium engineer company (MEC) provides embedded, responsive mounted and dismounted maneuver support. The MEC supports the maneuver force--the SBCT infantry battalions and companies. It readily integrates into maneuver operations and organizations at all levels based on the analysis of tasks required. It is an agile organization that assures freedom to maneuver on the battlefield within the combined-arms team framework. The MEC has three combat mobility platoons, one mobility support platoon, and a company headquarters section. The MEC normally task-organizes its platoons to infantry battalions and companies in a specific command-support relationship to provide a mission-specific, tailored package. It performs mounted and dismounted engineer tasks equally well.

a. **Combat Mobility Platoon.** The combat mobility platoon is normally the lowest-level engineer unit that can effectively accomplish independent mounted engineer missions and tasks. It is the basic building block of engineer force allocation and task organization. A combat mobility platoon is normally task-organized to support an infantry battalion, but it may support an infantry company based on METT-TC analysis. The combat mobility platoon may receive augmentation in the form of special equipment from the mobility support platoon. Engineer platoon-specific common-platform equipment includes engineer squad vehicles (ESVs) with mountable rollers or blades, MICLICs, and multiple-delivery mine systems (Volcanoes) (Figure 8-18). The combat mobility platoon's engineer squads carry a variety of explosives and demolitions. The squad is normally the minimum force

required to provide effective dismounted support to infantry companies. The squad is the engineer organization most likely to support an infantry company, particularly during offensive operations.

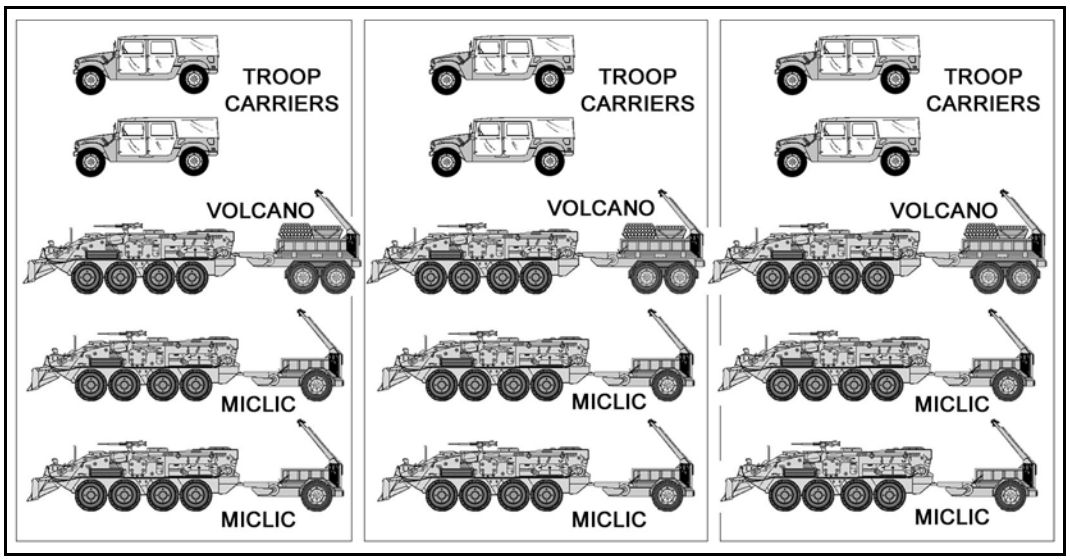


Figure 8-18. Combat mobility platoon.

b. **Mobility Support Platoon.** The mobility support platoon consists of a platoon headquarters section and three equipment-based mobility sections (Figure 8-19, page 8-28), equipped with light assault bridges, light earthmovers (deployable universal combat earthmovers [DEUCEs]), and high mobility engineer excavators (HMEEs). Unlike the combat mobility platoon, it is not organized to operate independently during offensive operations. The mobility support platoon provides the commander with specialized equipment capabilities to weight the main effort and to perform specialized mobility tasks. Each section is structured to provide equipment augmentation, focused on reducing enemy obstacles and fortifications, to each of the three combat mobility platoons. Each section has gap-crossing, obstacle-reduction, special-tool, and heavy-blade capabilities. The mobility support platoon provides a limited capability for countermobility, survivability, and sustainment operations.

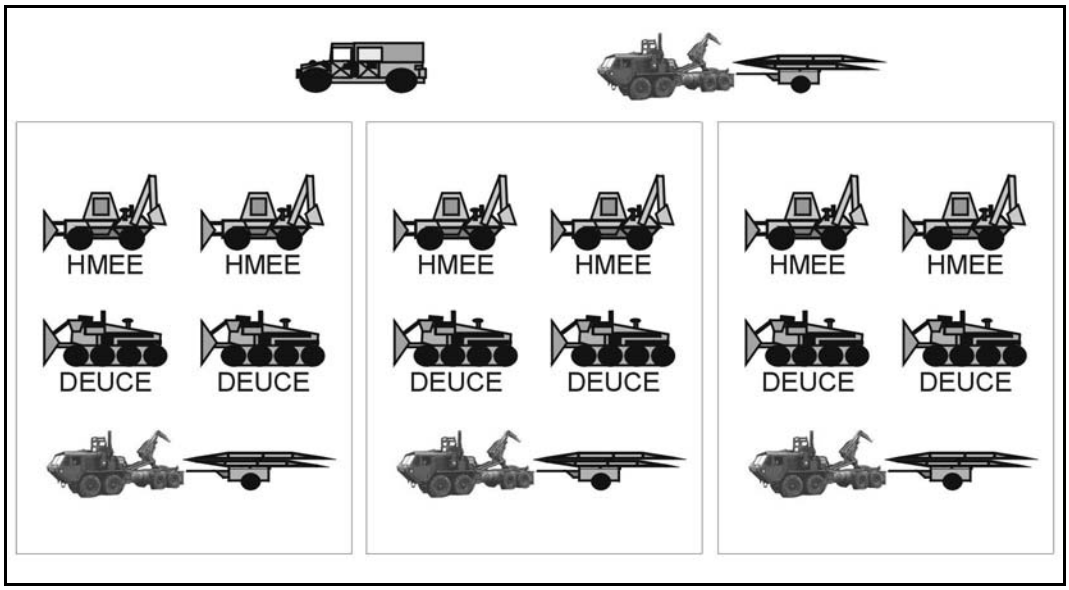


Figure 8-19. Mobility support platoon.

8-14. ENGINEER MISSIONS

Engineer missions fit into one of three categories: mobility, countermobility, and survivability. (Table 8-4 shows the tasks included in each of these categories.) An engineer platoon might be attached to a company. Engineers conduct reconnaissance, evaluate obstacles, and use demolitions and field expedients.

MOBILITY	COUNTERMOBILITY	SURVIVABILITY
Breaching obstacles. Clearing minefields. Clearing routes. Expedient gap crossing. Constructing combat roads or trails.	Constructing obstacles to turn, fix, block, or disrupt enemy forces.	Constructing crew-served weapons and vehicle fighting positions.

Table 8-4. Engineer missions.

8-15. MOBILITY

At the tactical level, overmatching mobility is critical to the success of the force. Engineers support infantry by performing obstacle reduction and route construction and or improvement.

a. **Obstacle Reduction.** Reduction is the creation of lanes through or over an obstacle to allow an attacking force to pass. The number and width of lanes created varies with the factors of METT-TC. The lanes must allow the assault force to rapidly pass through the obstacle. The breach force will reduce, proof (if required), mark, and report lane locations and the lane marking method by unit SOP. Engineers cannot reduce an obstacle until the obstacle has been identified, effective suppression and obscuration are in place, and the point of breach is secure. (For detailed discussions of breaching see FM 3-34.2 and FM 3-90.1.)

b. **Route Construction and Improvement.** Engineers have a limited capability to construct, improve, and maintain roads, bridges, and fords. In addition to providing mobility support during offensive operations, engineers can enhance mobility during defensive operations by focusing on the ability to shift forces. Enhancements to mobility during defensive operations include:

- Mobility between primary, alternate, and supplementary battle positions.
- Mobility of reserves to reinforcing positions.
- Mobility of reserves in the counterattack

8-16. COUNTERMOBILITY

Engineers construct obstacles that prevent the enemy from successfully executing his scheme of maneuver. (See FM 3-90.1 for a detailed discussion of countermobility operations.) Commonly used obstacles include minefields, wire obstacles, antitank ditches, road craters, abatises, and log cribs. Engineers also can reinforce restrictive terrain and existing obstacles to disrupt, fix, turn, or block the enemy. Platoons will execute the company commander's countermobility plan. Within this plan, the infantry rifle squads typically will assist engineers in the emplacement of obstacles. Regardless of the type of defense employed, the platoon leader must remember the five basic principles of obstacle employment:

- Obstacles must support the scheme of maneuver.
- Obstacles must be integrated with and covered by observed direct and indirect fires.
- Obstacles must tie into terrain and existing obstacles.
- Obstacles are most effective when complex and employed in depth.
- Obstacles should be employed to surprise the enemy.

8-17. SURVIVABILITY

The survivability plan will be synchronized with the company countermobility plan. Platoons should prepare by marking vehicle positions, identifying leaders to supervise position construction, and designating guides for the blade movement between positions. Platoons will execute the company commander's plan for priority of the survivability effort. This plan should specify the following:

- Level of survivability of each subordinate unit.
- Priority of survivability support by specific unit, type of weapon system, or combination.
- Type of position to be dug for a unit or type of weapon system.
- Sequence and time allocated for platoons to receive blade support.

Section IV. AIR DEFENSE

The air defense and aviation coordination cell's (ADACC's) air and missile defense (AMD) analysis determines if the SBCT will be task organized with air defense assets from a divisional short-range air defense (SHORAD) battalion. Even if the SBCT and, subsequently, the SBCT infantry battalion receive air defense assets, it is unlikely that the SBCT infantry platoon will be task organized with any of the air defense assets. However, Avengers and Linebackers may operate in and around the company AO in support of battalion and brigade assets. Therefore, the platoon must conduct its own air defense

operations, relying on disciplined passive air defense measures and the ability to actively engage aerial platforms with organic weapons systems.

8-18. SYSTEMS, ORGANIZATION, AND CAPABILITIES

The systems that may operate in and adjacent to the company AO are the Avenger, man-portable air defense systems (MANPADS), and Linebacker (Table 8-5). All systems can operate as MANPADS Stinger teams. The battalion may be supported by an air defense platoon equipped with Avengers or MANPADS. The air defense platoon is responsible for providing DS, GS, or GS-reinforcing (GS-R) coverage to the battalion.

Man-Portable System 	Personnel: 2-man crew Basic load: 6 missiles basic load w/ M998 HMMWV Acquisition/range: Visual Engagement range: 5 km Engagement altitude: 3 km + Mutual support: 2 km +
Bradley Linebacker 	Personnel: 4-man crew Basic load: 10 missiles (4 ready to fire, 6 stowed) Acquisition/range: Visual/thermal Engagement range: 5 km (Stinger), 2500 m 25-mm, 900 m coax Engagement altitude: 3 km + Mutual support: 3 km Emplacement time: Fire on the move Reload time: 4 minutes
Avenger 	Personnel: 2 man crew Basic load: 8 ready-to-fire missiles, 250 rds .50 cal Acquisition/range: Visual/FLIR 9-10 km, laser range finder Engagement range: 5 km +, .50 cal range: 6,470 m Rate of fire: 1025 rpmEngagement altitude: 3 km + Mutual support: 3 km Emplacement time: 6 min, can remote operations out to 50 meters

Table 8-5. Air defense systems.

a. Stinger. Although other SHORAD systems support divisional units, the SBCT infantry platoon is most likely to be supported by the Avenger (Figure 8-20) or a MANPADS (Figure 8-21, page 8-32). Stinger is designed to counter high-performance, low-level, ground attack aircraft; helicopters; and observation and transport aircraft.

(1) The Avenger's combined arms mission is to provide protection to combat forces, combat support elements, and other critical assets from attack. The Avenger is designed to counter hostile cruise missiles, unmanned aerial vehicles, and low-flying, high-speed, fixed-wing aircraft and helicopters attacking or transiting friendly airspace. The Avenger provides

the battalions with highly mobile dedicated air defense firepower. The Avenger is equipped with two standard vehicle-mounted launchers (SVML) which carry four Stinger missiles each and have the following capabilities:

- The modified fire control subsystem fires and the SVML allow the Avenger to shoot on the move.
- The Avenger weapons system has an unobstructed, 360-degree field of fire and can engage at elevations between -10 and +70 degrees.
- The .50 cal machine gun affords a measure of self-protection by providing additional coverage of the Stinger missile's inner launch boundary.
- Avenger's sensor package (forward-looking infrared radar [FLIR], carbon dioxide, eye-safe laser range finder, and a video autotracker) provides target acquisition capability in battlefield obscuration at night and in adverse weather.
- The two-man crew remains in the vehicle under armor protection.
- Targeting data is provided by the forward area air defense (FAAD) command, control, communications, and intelligence (C3I).
- The Avenger system allows shoot-on-the-move and slew-to-cue capability.
- In the event of launcher system damage or failure or static mode, the system maintains dismounted Stinger missile capability.
- The firing sequence is entirely automated, including superelevation and lead, so that the gunner only needs to push the fire button to initiate the fire sequence and immediately select and prepare the next missile for firing.

Figure 8-20. AVENGER.

(2) The MANPADS Stinger missile system employs a two-man crew (crew chief and gunner). The MANPADS team normally has assigned transportation. Unit leaders must carefully consider the consequences before separating a Stinger team from its vehicle. Stinger teams operating away from their vehicles have no more than two missiles available for resupply.

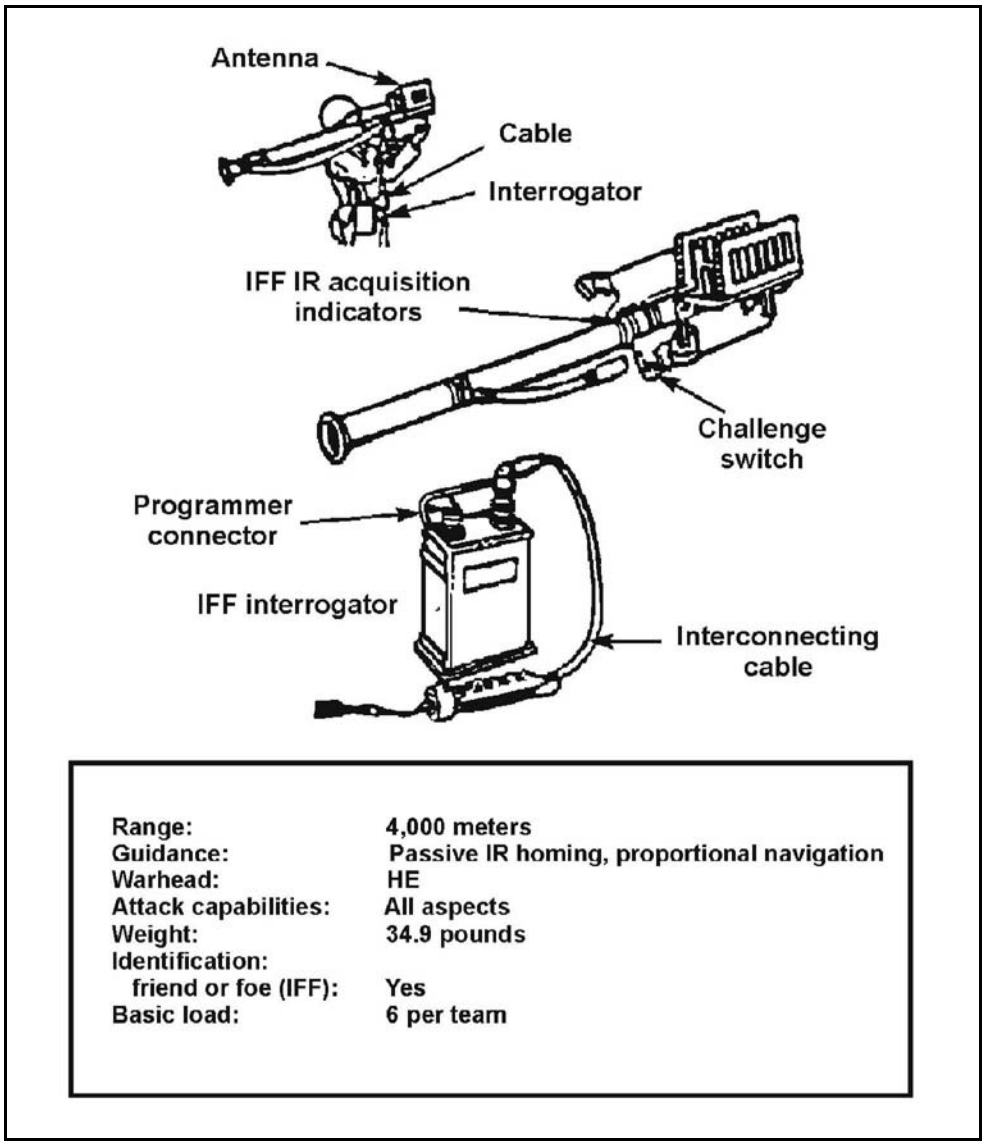


Figure 8-21. Stinger MANPADS air defense system.

b. **Early Warning Alerts.** If the brigade has an attached SHORAD battery, the platoon will receive early warning alerts from the SHORAD battery and its elements. The SHORAD C3I Sentinel radar team can broadcast early warning of enemy air activity to SHORAD elements (battery, platoon, or section), to FA fire units, and to air defense liaison officers (LNOs). The SHORAD battery will then provide voice early warning on the brigade command net. If METT-TC factors permit, the SHORAD platoon provides voice early warning to the battalions. The Sentinel radar (Figure 8-22) provides a 360-degree detection capability for various air tracks (rotary- and fixed-wing aircraft, UAVs, and cruise missiles) to a range of 40 kilometers. The Sentinel radar is normally OPCON to the respective SHORAD battery commander.

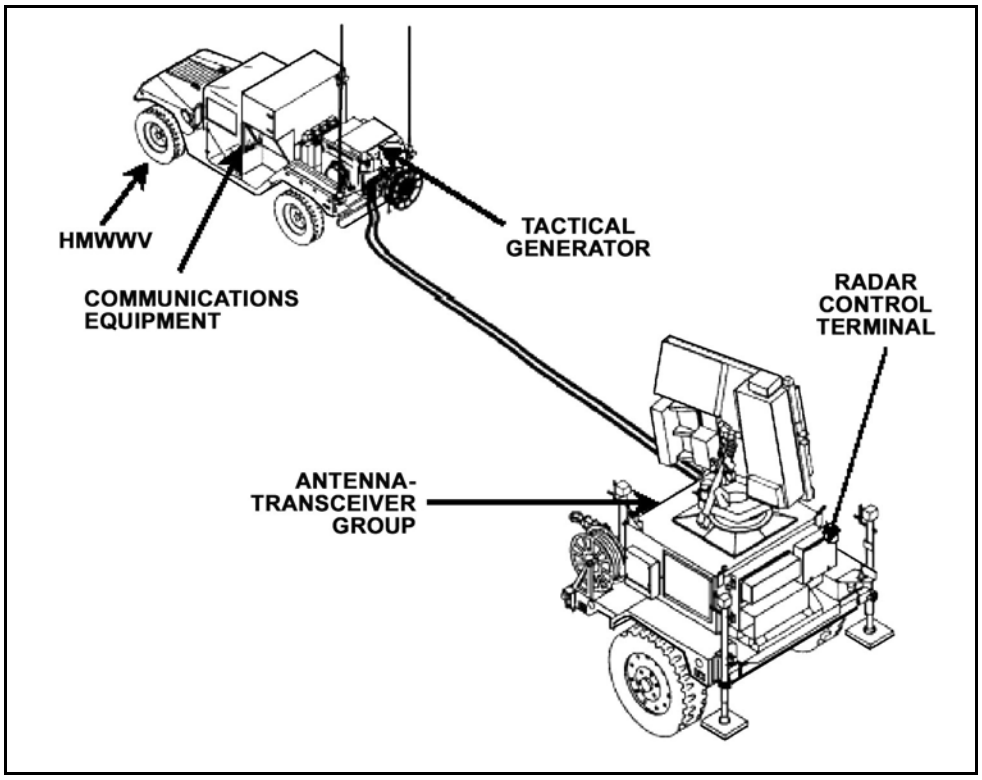


Figure 8-22. Sentinel radar system.

8-19. EMPLOYMENT OF AIR DEFENSE SYSTEMS

In offensive situations, air defense elements accompany the main attack. They may maneuver with the battalion's lead companies, orienting on low-altitude air avenues of approach. When the unit is moving or in a situation that entails short halts, air defense elements should remain within the platoon's organic weapon system maximum ranges to assure mutual support. The Stinger gunners (MANPADS) can dismount to provide air defense when the unit reaches the objective or pauses during the attack. In the defense, air defense elements may establish BPs based on available IPB information and the company commander's scheme of maneuver.

8-20. WEAPONS CONTROL STATUS

The weapons control status (WCS) describes the relative degree of control in effect for air defense fires. It applies to all weapons systems. The weapons control status is dictated in the battalion OPORD and may be updated based on the situation. The three levels of control are:

a. **Weapons Free.** Crews can fire at any air target not positively identified as friendly. This is the least restrictive WCS level.

b. **Weapons Tight.** Crews can fire only at air targets positively identified as hostile according to the prevailing hostile criteria.

c. **Weapons Hold.** Crews are prohibited from firing except in self-defense or in response to a formal order. This is the most restrictive control status level.

8-21. EARLY WARNING PROCEDURES

Air defense warnings (ADWs) include--

- RED - Air or missile attack imminent or in progress.
- YELLOW - Air or missile attack probable.
- WHITE - Air or missile attack not likely.

While air defense warnings cover the probability of hostile air action over the entire theater of war or operations, local ADWs describe with certainty the air threat for a specific part of the battlefield. Air defense units use these local warnings to alert Army units to the state of the air threat in terms of "right here, right now." There are three local air defense warning levels:

- DYNAMITE - Air platforms are inbound or are attacking locally now.
- LOOKOUT - Air platforms are in the area of interest but are not threatening. They may be inbound, but there is time to react.
- SNOWMAN - No air platforms pose a threat at this time.

NOTE: The area air defense commander routinely issues ADWs for dissemination throughout the theater of war or operations. These warnings describe the general state of the probable air threat and apply to the entire area.

8-22. REACTION PROCEDURES

Reaction procedures include both passive and active air defense measures.

a. **Passive Air Defense.** Passive air defense is the platoon's primary method for avoiding enemy air attack. Passive air defense consists of all measures taken to prevent the enemy from detecting or locating the unit, to minimize the target acquisition capability of enemy aircraft, and to limit damage to the unit if it comes under air attack. Target detection and acquisition are difficult for crews of high-performance aircraft, and the company can exploit this advantage. In most cases, enemy pilots must be able to see and identify a target before they can launch an attack.

(1) ***Guidelines*.** The SBCT infantry platoon should follow these guidelines to avoid detection or limit damage if detected:

- When stopped, occupy positions that offer cover and concealment and dig in and camouflage vehicles that are exposed.
- When moving, use covered and concealed routes.
- Disperse vehicles as much as possible to make detection and attack more difficult.
- Wipe out track marks leading to vehicle positions and eliminate or cover the spoil from dug-in positions.
- If moving when an enemy aircraft attacks, disperse and seek covered and concealed positions.
- Do not fire on a hostile fixed-wing aircraft unless it is clear that the aircraft has identified friendly elements. Premature engagement compromises friendly positions.

- Designate air guards for every vehicle and position; establish and maintain 360-degree security.
- Establish an air warning system in the unit SOP, including both visual and audial signals.

(2) ***Procedures.*** When the platoon observes fixed-wing aircraft, helicopters, or UAVs that could influence its mission, it initially takes passive air defense measures unless the situation requires immediate active measures. Passive air defense measures normally means that each platoon initiates its react-to-air-attack battle drill; however, the commander can initiate specific passive measures if necessary. Refer to the passive air defense guidelines for the company discussed earlier in this section.

NOTE: Passive air defense also includes the company's preparations for conducting active air defense measures.

Passive air defense involves these three steps:

- Step 1 - Alert the company with a contact report.
- Step 2 - Deploy or take the appropriate actions. If the company is not in the direct path of an attacking aircraft, the commander or platoon leaders order vehicles to seek cover and concealment and halt with at least a 100-meter interval between vehicles. The team also may be ordered to continue moving as part of the battalion.
- Step 3 - Prepare to engage. Fighting vehicle crews prepare to engage the aircraft with machine-gun or main-gun fire on order of the commander or their platoon leader.

b. Active Air Defense. The platoon avoids engaging enemy aircraft if possible. If engagement is unavoidable, the platoon uses a technique known as volume of fire (Figure 8-23, page 8-36). This technique is based on the premise that the more bullets a unit can put in the sky, the greater the chance the enemy will fly into them. Even if these fires do not hit the enemy, a "wall of lead" in the sky can intimidate enemy pilots, causing them to break off their attack, or it can distract them from taking proper aim. One of the most important points about volume of fire is that once the lead distance is estimated, the soldier must aim at the estimated aiming point and fire at that single point until the aircraft has flown past it. The soldier maintains the aiming point, not the lead distance. Once the soldier starts firing, he does not adjust his weapon. The platoon leader establishes the aiming point based on the type of aircraft that is attacking (Figure 8-24, page 8-36).

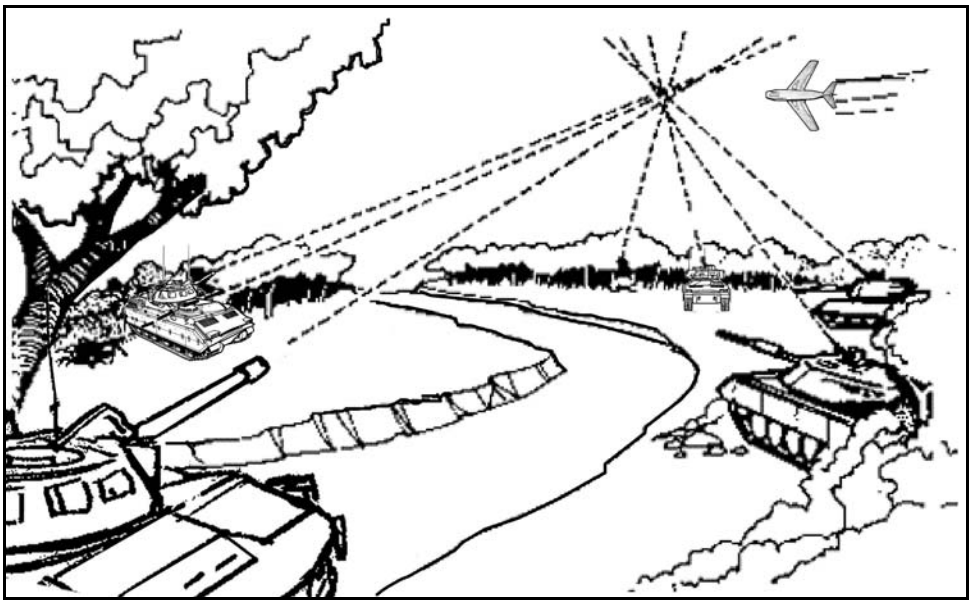
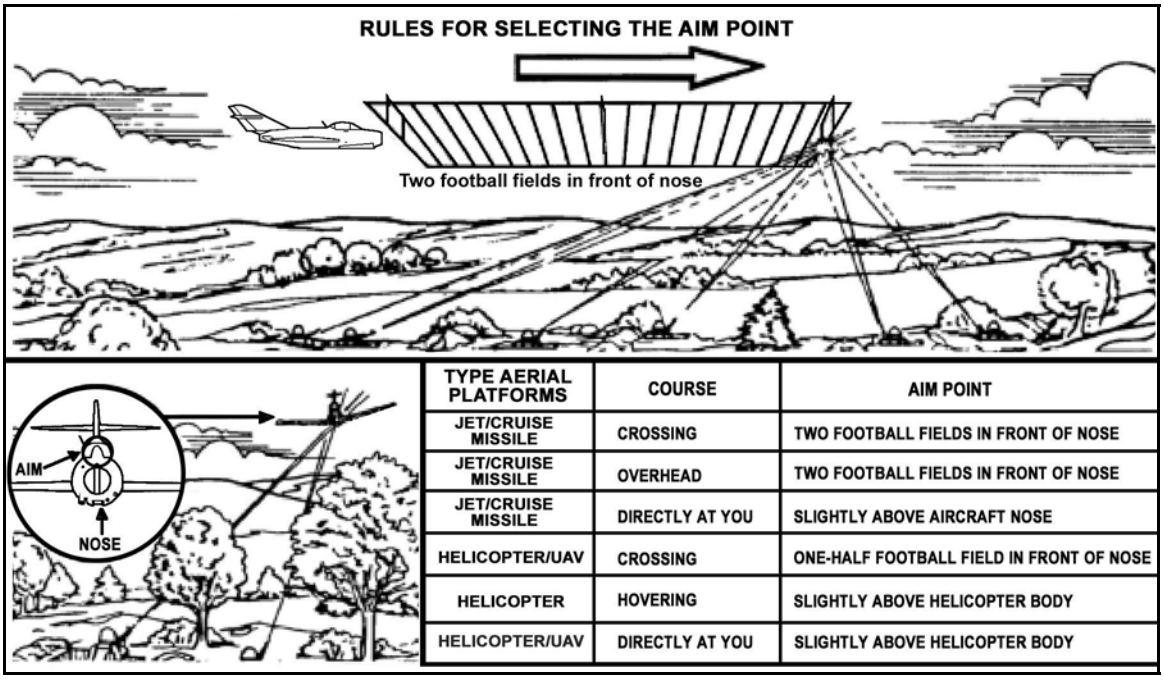


Figure 8-23. Volume of fire.



TYPE AERIAL PLATFORMS	COURSE	AIM POINT
JET/CRUISE MISSILE	CROSSING	TWO FOOTBALL FIELDS IN FRONT OF NOSE
JET/CRUISE MISSILE	OVERHEAD	TWO FOOTBALL FIELDS IN FRONT OF NOSE
JET/CRUISE MISSILE	DIRECTLY AT YOU	SLIGHTLY ABOVE AIRCRAFT NOSE
HELICOPTER/UAV	CROSSING	ONE-HALF FOOTBALL FIELD IN FRONT OF NOSE
HELICOPTER	HOVERING	SLIGHTLY ABOVE HELICOPTER BODY
HELICOPTER/UAV	DIRECTLY AT YOU	SLIGHTLY ABOVE HELICOPTER BODY

Figure 8-24. Aim points.

Section V. NUCLEAR, BIOLOGICAL, AND CHEMICAL SUPPORT

NBC assets within the SBCT are limited; therefore, it is imperative that the platoon practices the fundamentals of NBC defense, avoidance, protection, and decontamination in order to survive on a contaminated battlefield.

8-23. RECONNAISSANCE SUPPORT

The NBC reconnaissance platoon organic to the RSTA squadron is the only internal NBC reconnaissance available to the SBCT. The NBC reconnaissance platoon can locate, identify, and mark areas of contamination. Since NBC reconnaissance assets are limited, the SBCT infantry company commander must plan for alternate means of conducting NBC reconnaissance (such as scouts and military patrols [MPs]).

8-24. DECONTAMINATION SUPPORT

External decontamination support is not available at the company level. For operational decontamination, the platoon must request support from the company, who must request support from the battalion's decontamination team, which is equipped with the modular decontamination system (MDS). Thorough decontamination operations require the support of an external decontamination platoon. The company must request this support through the SBCT infantry battalion and SBCT S3 sections. The contaminated element will be tasked to augment the decontamination platoon during the conduct of thorough decontamination operations. (For a more detailed discussion of decontamination requirements, refer to FM 3-5.)